

01-03-02

JC10 Rec'd PCT/TO 26 DEC 2002

FORM PTO-1390
(REV. 5-93)U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICEATTORNEY'S DOCKET NUMBER
10191/2167TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/019870

INTERNATIONAL APPLICATION NO.
PCT/JP00/02005INTERNATIONAL FILING DATE
16 June 2000
(16.06.00)PRIORITY DATE CLAIMED:
25 June 1999
(25.06.99)TITLE OF INVENTION
TERMINAL HAVING A CODER AND DECODER FOR MPEG4 DATA FILESAPPLICANT(S) FOR DO/EO/US
Martin WAWRA

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) immediately rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)) (unsigned).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
14. ☒ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: International Search Report (translated), ~~Preliminary Examination Report~~ and PCT/RO/101.

EXPRESS MAIL NO.: E1003624858US

U.S. APPLICATION NO. 10/019870
37 C.F.R. 1.5

INTERNATIONAL APPLICATION NO.
PCT/DE00/02005

531 Rec'd PCT

10191/2167

26 DEC 2001

17. ☒ The following fees are submitted:

Basic National Fee (37 CFR 1.492(a)(1)-(5)):

Search Report has been prepared by the EUROPEAN PATENT OFFICE or

JPO \$890.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) \$710.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482) but
international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$740.00

Neither international preliminary examination fee (37 CFR 1.482) nor international search
fee (37 CFR 1.445(a)(2)) paid to USPTO \$1,040.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims
satisfied provisions of PCT Article 33(2)-(4) \$100.00

CALCULATIONS | PTO USE ONLY

ENTER APPROPRIATE BASIC FEE AMOUNT = \$ 890

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months
from the earliest claimed priority date (37 CFR 1.492(e)).

\$

Claims	Number Filed	Number Extra	Rate		
Total Claims	5 - 20 =	0	X \$18.00	\$ 0	
Independent Claims	1 - 3 =	0	X \$84.00	\$ 0	
Multiple dependent claim(s) (if applicable)			+ \$280.00	\$	

TOTAL OF ABOVE CALCULATIONS = \$ 890

Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must
also be filed. (Note 37 CFR 1.9, 1.27, 1.28).

\$

SUBTOTAL = \$ 890

Processing fee of \$130.00 for furnishing the English translation later the ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$

TOTAL NATIONAL FEE = \$ 890

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property

\$

TOTAL FEES ENCLOSED = \$ 890

Amount to be:
refunded \$
charged \$

- a. ☐ A check in the amount of \$ _____ to cover the above fees is enclosed.
- b. ☒ Please charge my Deposit Account No. 11-0600 in the amount of \$890.00 to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 11-0600. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:
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Customer No. 26646

SIGNATURE

Richard L. Mayer, Reg. No. 22,490

NAME

DATE

By: *Richard L. Mayer* (Reg. No. 41,172)
Richard L. Mayer
12/26/01

10/019870
531 Rec'd PCT/PT 26 DEC 2001
[10191/2167]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Martin WAWRA
Serial No. : To Be Assigned
Filed : Herewith
For : TERMINAL HAVING A CODER AND
DECODER FOR MPEG4 DATA FILES
Art Unit : To Be Assigned
Examiner : To Be Assigned

Assistant Commissioner
for Patents
Washington, D.C. 20231
Box Patent Application

**PRELIMINARY AMENDMENT AND
37 C.F.R. § 1.125 SUBSTITUTE SPECIFICATION STATEMENT**

SIR:

Please amend the above-identified application before examination, as set forth below.

IN THE SPECIFICATION AND ABSTRACT:

In accordance with 37 C.F.R. § 1.121(b)(3), a Substitute Specification (including the Abstract, but without claims) accompanies this response. It is respectfully requested that the Substitute Specification (including Abstract) be entered to replace the Specification of record.

IN THE CLAIMS:

On the first page of the claims, first line, change "What is claimed is:" to:

--What Is Claimed Is--.

Please cancel original claims 1 to 6, without prejudice, and also cancel substitute claims 1-5, without prejudice, in the underlying PCT Application No. PCT/DE00/02005.

Please add the following new claims:

6. (New) A terminal for running a multimedia application according to the MPEG-4 standard, comprising:

a coder for an MPEG-4 data file;

a decoder for the MPEG-4 data file; and

an interface element for sending a data file coming from the multimedia application via the Internet using an Internet protocol and for receiving a data file coming from the Internet for the multimedia application, the interface element forwarding the data file coming from the Internet to the multimedia application, wherein:

the interface element transmits data files at least one of from and to other terminals that do not include the interface element via the Internet using the Internet protocol.

7. (New) The terminal according to claim 6, wherein:

the interface element provides to the multimedia application a message concerning a status of a data file transmission via the Internet.

8. (New) The terminal according to claim 7, wherein:

the multimedia application requests the data file transmission with an additional terminal via the Internet, and

the request occurs by having the multimedia application communicate to the interface element one of an address of the additional terminal, a data file to be transmitted, a sought service, and a data file to be received, information as to whether an acknowledgment message is to be sent to the multimedia application concerning the status of the data file transmission, and a maximum length of time that waiting is to take place for the data file transmission, so that the interface element therewith creates the data file transmission to the additional terminal using the Internet protocol.

9. (New) The terminal according to claim 8, wherein:
the interface element communicating to the multimedia application a message from the additional terminal concerning a success of a reception of the data file to be transmitted, a pointer to received data files, and additional items of information concerning an availability of data files.
10. (New) The terminal according to claim 9, wherein:
the interface element provides the multimedia application with a registration for requesting the data file transmission via the Internet.

Remarks

This Preliminary Amendment cancels original claims 1 to 6, without prejudice, and also cancels substitute claims 1-5, without prejudice, in the underlying PCT Application No. PCT/DE00/02005. The Preliminary Amendment also adds new claims 6-10. The new claims conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

In accordance with 37 C.F.R. § 1.121(b)(3), the Substitute Specification (including the Abstract, but without the claims) contains no new matter. The amendments reflected in the Substitute Specification (including Abstract) are to conform the Specification and Abstract to U.S. Patent and Trademark Office rules or to correct informalities. As required by 37 C.F.R. § 1.121(b)(3)(iii) and § 1.125(b)(2), a Marked Up Version Of The Substitute Specification comparing the Specification of record and the Substitute Specification also accompanies this Preliminary Amendment. Approval and entry of the Substitute Specification (including Abstract) are respectfully requested.

The underlying PCT Application No. PCT/DE00/02005 includes an International Search Report, dated November 9, 2000, and an International Preliminary Examination Report, dated April 24, 2001, copies of which are submitted herewith.

Applicant asserts that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Respectfully Submitted,

KENYON & KENYON

Dated: 12/24/01

By: Richard L. Mayer (Reg. No. 41,172)
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531 Rec'd PCT/PTC 26 DEC 2001

[10191/2167]

TERMINAL HAVING A CODER AND DECODER FOR MPEG4 DATA FILES

Field Of The Invention [Background Information]

The present invention [is based on] relates to a terminal having a coder and decoder for MPEG4 data files [according to the species defined in the independent claim].

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Background Information

It is known that terminals use multimedia applications according to the standard ISO/IEC JTSC1/SC29/W11-MPEG 4. An interface element, the DMIF (Delivery Multimedia Integration Framework) layer, represents a component of MPEG4 that enables access of an MPEG4 application to a network, or access to local storage media, via specific commands, known as DAI (DMIF Application Interface). In this way, it is achieved that no network access, or access to local storage media, need be built into an application according to MPEG-4.

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In MPEG-4, each data file is handled as a separate stream of data; i.e., a new channel is opened for each stream of data, and thus for each data file.

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In J.F. Huard et al.: Realizing the MPEG-4 Multimedia Delivery Framework, IEEE Network, pp. 35-45, July/August 1998, describes the functioning of DMIF and the DAI, and discusses communication between DMIF terminals. However, this communication can also be carried out via the Internet. In N. Delgado et al.: A MPEG-4 DMIF Implementation Over IP Networks, pp. 281-290, INDC 98, the use of DMIF in communication via the Internet is described. Here, both the sending and the receiving terminal have the DMIF functionality.

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Summary Of The [Advantages of the] Invention

The terminal according to the present invention [having the features of the independent patent claim] has, in relation thereto, the advantage that a transmission of data files via the Internet by a multimedia application is enabled between a terminal having the interface element and other terminals not having the interface element. In this way, access to Internet services, such as for example the World Wide Web, FTP, e-mail, and Telnet, is now possible for terminals having the interface element, in particular the DMIF layer, and thus for the multimedia application. This significantly expands the range of application of the terminals having such an interface element.

In addition, it is advantageous that no functions need be added to the multimedia application in order to enable a transfer of data files via the Internet, since these functions are taken over by the interface element. Thus, multimedia applications are independent of the respective characteristics of the terminal; only the commands to the interface element that executes the actual data file transfer via the Internet need be known.

In addition, it is advantageous that data files in various formats from other terminals can now be loaded by terminals in a simple manner, using the interface element.

[Through the measures stated in the dependent claims, the advantageous development and improvement of the terminal indicated in the independent claim is possible.]

The terminal according to the present invention offers the advantage that the multimedia application that has requested the data file transfer via the Internet is informed by the interface element about the status of the data file transfer via the Internet. For example, the multimedia application can be informed as to whether the data file transfer has been accomplished or not.

It is particularly advantageous that the interface element calls protocols, such as for example the TCP/IP protocol, in order to address other terminals that do not have the interface element. In this way, the flexibility of terminals having the interface element is significantly

increased. Because this calling is carried out through new specific commands in the interface element, this calling is simple and fast. In addition, the existing Internet protocols can be accessed, so that an implementation of the calling of Internet protocols by the interface element is very simple.

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Advantageously, with the method according to the present invention a data file transfer from arbitrary terminals to or from a terminal can be carried out using the interface element. In this way, a high degree of flexibility is achieved.

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It is advantageous that the multimedia application informs the interface element as to which address the sought terminal has, which data file or which service is sought, and how long the interface element is to wait for the construction of a data file transfer. In this way, the interface element need only forward these items of information from the multimedia application, and, in addition, the application is informed as to how long it is to wait for a data

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file transfer.

In the acknowledgment message concerning the status of the data file transmission to the other terminal, the interface element delivers to the multimedia application, among other things, a pointer to received data files, and the interface element informs the multimedia

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application concerning the availability of data files. In this way, the user of the multimedia application is kept continually informed concerning the status of the data file transmission, and can react thereto if necessary.

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In addition, the multimedia application is advantageously informed as to the fact that the multimedia application's request for a data file transmission has been registered with another terminal, or as to which items of information have been received from the requested terminal.

[Drawing

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Exemplary embodiments of the invention are shown in the drawing and are explained in more detail in the following specification.] Brief Description Of The Drawings

Figure 1 shows a terminal having an interface element, and the connection to other terminals[;].

Figure 2 shows a block diagram describing the calling of a terminal by a DMIF terminal[;].

Figure 3 shows the schematic construction of the software system in the DMIF terminal[;].

Figure 4 shows a flow of information from the application at a DMIF terminal to the Internet and back.

Detailed Description [of the Exemplary Embodiments]

Figure 1 shows how a terminal 35 according to the present invention is connected with other terminals via the Internet 31. Here, these additional terminals are a World Wide Web server 34, an FTP server 32, and a POP3 server 33. A server is a computer from which other computers can transmit data files and/or can cause programs to be executed. The World Wide Web is a generally known service of the Internet 31. FTP stands for File Transfer Protocol, i.e., a protocol enabling the transmission of data files via the Internet. A POP3 protocol is a widely distributed protocol for operating a computer for the processing of electronic mail and for the reception of electronic mail and transmission of mail to be sent by the user via his/her terminals, the POP3 server ensuring that the electronic mail reaches its addressees. Besides these cited servers, any other server connected to the Internet 31 is also available for the terminal 35, as long as terminal 35 is authorized for access.

The design of terminal 35 is as follows: an application 29 according to the MPEG-4 standard, for example a program with which video data are coded, is placed on an interface element 30. This interface element 30 contains functions that allow access to the Internet 31 via known Internet protocols, or for example also local storage media. Due to the introduction of such an interface element 30, no access functions to the Internet 31, or for example the local storage media, need be integrated into multimedia application 29.

Interface element 30 is the DMIF layer in the above-cited standard ISO/IEC

JTSC1/SC29/W11-MPEG4, but supplemented with the features of the [patent claims] present invention, and is so designated in the following exemplary embodiments. The commands that allow communication between the DMIF layer and application 29 are acquired through the DAI.

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The block switching diagram in Figure 2 describes a flow of information from a multimedia application 1 via a DAI 2 via a DMIF checking station 3, a DMIF layer 4, via Internet protocol 5 to a terminal 6 sought by the application. Multimedia application 1, which is used on the DMIF terminal, requests the connection to terminal 6, which is not a DMIF terminal, but rather is for example an e-mail terminal, i.e. for example a POP3 server. Via interface DAI 2, application 1 sends a request for a data file transfer with terminal 6. For this purpose, multimedia application 1 communicates a command, referred to below as Transfer Request, expressing this request and having for example the information concerning which data file is to be transferred, or which service is desired by the application, for example e-mail, and the location where the data file is to be stored.

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In addition, this command has the information concerning the maximum length of time that DMIF layer 4 is to wait until the communication with the other terminal is created. In this way, it is prevented that DMIF layer 4 waits too long for a connection that cannot be set up for reasons such as, for example, the failure of the sought terminal.

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The command is then checked for correctness in DMIF checking station 3, and is then processed by DMIF layer 4. DMIF layer 4 then calls Internet protocol 5 in order to create the connection with terminal 6. DMIF layer 4 will wait until either the connection to terminal 6 has been created or the wait time specified in the command has been reached.

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Using this method, in the Transfer Request command it is possible to load data from other terminals. For this purpose, the data file must be named, as must the location at which the data file is located and the location to which the data file is loaded. In addition, it is provided that in the Transfer Request command a parameter is indicated concerning whether the application receives an acknowledgment or not. On the basis of this parameter, DMIF layer 4 recognizes whether it is to send an acknowledgment to the application or not.

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Figure 3 schematically shows the design of a software system in a terminal that enables the calling (described in Figure 1) of an Internet protocol using a DMIF layer. A multimedia application 25 communicates with a DMIF layer 27 using commands 26. This communication is carried out in both directions. The commands 26 constitute a DAI. They thus form this interface. The Transfer Request command is added to this interface, as is also a command that specifies the acknowledgment.

Internet protocols that are called by DMIF layer 27 are for example connected to DMIF layer 27. For this purpose, commands with which these Internet protocols can be called are inserted into DMIF layer 27.

Figure 4 shows the flow of information for a data file transfer from another terminal to a DMIF terminal; here an application executed on the DMIF terminal does not receive a message concerning the status of the communication from the DMIF layer. The application will therefore assume that the desired data file can come at any time.

Multimedia application 7 sends a request that a particular data file be loaded from another terminal. DMIF layer 9 then creates the communication with the remote terminal via the Internet, using an Internet protocol 10. DMIF layer 9 receives the desired data file via the Internet using Internet protocol 10. DMIF layer 9 places a pointer on the received data file, and multimedia application 7 receives a message that the data file has been received and the data are in order, as well as the pointer to the received data file.

In the following, a flow of information is shown for the case in which a multimedia application 7 wishes to load a particular data file from another terminal, but the maximum time that DMIF layer 9 will wait until the connection to the desired terminal is set up has been exceeded.

Multimedia application 7 sends a command, Transfer Request, to the effect that the application wishes to load a particular data file from another terminal. DMIF layer 9 processes this command and starts an Internet protocol 10 in order to establish connection with the desired terminal via the Internet. DMIF layer 9 recognizes that the maximum wait

time for a connection setup with the remote terminal has been exceeded, and communicates this to multimedia application 7. An error message transmitted to DMIF layer 9 via the Internet is handled in the same way.

- 5 In the following, the flow of information is shown for the case in which a multimedia application of a DMIF terminal 35 wishes to load a data file from another terminal, and receives acknowledgment messages from DMIF layer 9 concerning the status of the communication.
- 10 Multimedia application 7 on DMIF terminal 35 sends a command, Transfer Request, for the loading of a data file from another terminal. DMIF layer 9 processes this command, and multimedia application 7 is informed as to the number with which this request of multimedia application 7 has been provided by DMIF layer 9, and that this request has been recognized. In addition, DMIF layer 9 starts an Internet protocol 10, so that the desired terminal is
- 15 reached via the Internet. DMIF layer 9 recognizes that items of information have been received via the Internet for multimedia application 7, and communicates the them in multimedia application 7. DMIF layer 9 receives the desired data file, and DMIF layer 9 gives multimedia application 7 a pointer to this loaded data file.
- 20 An MPEG-4 application 7, whose network access takes place via a DMIF layer 9, wishes to address a World Wide Web server in order to load a data file via the HTTP protocol. MPEG-4 application 7 communicates a command, Transfer Request, which signals the request for this data transfer, via the DAI, and necessary parameters such as target address and data file and connection parameters are handed over. DMIF layer 9 opens a signaling
- 25 channel that communicates the desire of the MPEG-4 application to the HTTP terminal, and receives the data file according to the HTTP standard. The application is informed as to whether the transmission has taken place or not, and DMIF layer 9 provides the application with a pointer to the received data file.
- 30 An MPEG-4 application 7 wishes to send an e-mail. In this case, a pointer to the e-mail, along with the command Transfer Request for the transfer of a data file, is communicated to the DMIF layer, and DMIF layer 9 is additionally informed that an e-mail is to be sent using

this data file. With this information, DMIF layer 9 can create a connection to the terminal for the sending of e-mails, and the e-mail can be sent using, for example, the POP-3 protocol. Finally, application 7 is informed that the data transfer has been carried out and that it was possible to send the e-mail.

[illegible]

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TERMINAL HAVING A CODER AND DECODER FOR MPEG4 DATA FILES

Field Of The Invention

The present invention relates to a terminal having a coder and decoder for MPEG4 data files.

5 Background Information

It is known that terminals use multimedia applications according to the standard ISO/IEC JTSC1/SC29/W11-MPEG 4. An interface element, the DMIF (Delivery Multimedia Integration Framework) layer, represents a component of MPEG4 that enables access of an
10 MPEG4 application to a network, or access to local storage media, via specific commands, known as DAI (DMIF Application Interface). In this way, it is achieved that no network access, or access to local storage media, need be built into an application according to MPEG-4.

15 In MPEG-4, each data file is handled as a separate stream of data; i.e., a new channel is opened for each stream of data, and thus for each data file.

In J.F. Huard et al.: Realizing the MPEG-4 Multimedia Delivery Framework, IEEE Network, pp. 35-45, July/August 1998, describes the functioning of DMIF and the DAI, and discusses
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Summary Of The Invention

The terminal according to the present invention has, in relation thereto, the advantage that a transmission of data files via the Internet by a multimedia application is enabled between a terminal having the interface element and other terminals not having the interface element. In this way, access to Internet services, such as for example the World Wide Web, FTP, e-mail, and Telnet, is now possible for terminals having the interface element, in particular the DMIF layer, and thus for the multimedia application. This significantly expands the range of application of the terminals having such an interface element.

In addition, it is advantageous that no functions need be added to the multimedia application in order to enable a transfer of data files via the Internet, since these functions are taken over by the interface element. Thus, multimedia applications are independent of the respective characteristics of the terminal; only the commands to the interface element that executes the actual data file transfer via the Internet need be known.

In addition, it is advantageous that data files in various formats from other terminals can now be loaded by terminals in a simple manner, using the interface element.

The terminal according to the present invention offers the advantage that the multimedia application that has requested the data file transfer via the Internet is informed by the interface element about the status of the data file transfer via the Internet. For example, the multimedia application can be informed as to whether the data file transfer has been accomplished or not.

It is particularly advantageous that the interface element calls protocols, such as for example the TCP/IP protocol, in order to address other terminals that do not have the interface element. In this way, the flexibility of terminals having the interface element is significantly increased. Because this calling is carried out through new specific commands in the interface element, this calling is simple and fast. In addition, the existing Internet protocols can be accessed, so that an implementation of the calling of Internet protocols by the interface element is very simple.

Advantageously, with the method according to the present invention a data file transfer from arbitrary terminals to or from a terminal can be carried out using the interface element. In this way, a high degree of flexibility is achieved.

5 It is advantageous that the multimedia application informs the interface element as to which address the sought terminal has, which data file or which service is sought, and how long the interface element is to wait for the construction of a data file transfer. In this way, the interface element need only forward these items of information from the multimedia application, and, in addition, the application is informed as to how long it is to wait for a data
10 file transfer.

In the acknowledgment message concerning the status of the data file transmission to the other terminal, the interface element delivers to the multimedia application, among other things, a pointer to received data files, and the interface element informs the multimedia
15 application concerning the availability of data files. In this way, the user of the multimedia application is kept continually informed concerning the status of the data file transmission, and can react thereto if necessary.

In addition, the multimedia application is advantageously informed as to the fact that the
20 multimedia application's request for a data file transmission has been registered with another terminal, or as to which items of information have been received from the requested terminal.

Brief Description Of The Drawings

25 Figure 1 shows a terminal having an interface element, and the connection to other terminals.

Figure 2 shows a block diagram describing the calling of a terminal by a DMIF terminal.

Figure 3 shows the schematic construction of the software system in the DMIF terminal.

30 Figure 4 shows a flow of information from the application at a DMIF terminal to the Internet and back.

Detailed Description

Figure 1 shows how a terminal 35 according to the present invention is connected with other terminals via the Internet 31. Here, these additional terminals are a World Wide Web server 34, an FTP server 32, and a POP3 server 33. A server is a computer from which other computers can transmit data files and/or can cause programs to be executed. The World Wide Web is a generally known service of the Internet 31. FTP stands for File Transfer Protocol, i.e., a protocol enabling the transmission of data files via the Internet. A POP3 protocol is a widely distributed protocol for operating a computer for the processing of electronic mail and for the reception of electronic mail and transmission of mail to be sent by the user via his/her terminals, the POP3 server ensuring that the electronic mail reaches its addressees. Besides these cited servers, any other server connected to the Internet 31 is also available for the terminal 35, as long as terminal 35 is authorized for access.

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Interface element 30 is the DMIF layer in the above-cited standard ISO/IEC JTSC1/SC29/W11-MPEG4, but supplemented with the features of the present invention, and is so designated in the following exemplary embodiments. The commands that allow communication between the DMIF layer and application 29 are acquired through the DAI.

The block switching diagram in Figure 2 describes a flow of information from a multimedia application 1 via a DAI 2 via a DMIF checking station 3, a DMIF layer 4, via Internet protocol 5 to a terminal 6 sought by the application. Multimedia application 1, which is used on the DMIF terminal, requests the connection to terminal 6, which is not a DMIF terminal, but rather is for example an e-mail terminal, i.e. for example a POP3 server. Via interface DAI 2, application 1 sends a request for a data file transfer with terminal 6. For this purpose,

multimedia application 1 communicates a command, referred to below as Transfer Request, expressing this request and having for example the information concerning which data file is to be transferred, or which service is desired by the application, for example e-mail, and the location where the data file is to be stored.

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In addition, this command has the information concerning the maximum length of time that DMIF layer 4 is to wait until the communication with the other terminal is created. In this way, it is prevented that DMIF layer 4 waits too long for a connection that cannot be set up for reasons such as, for example, the failure of the sought terminal.

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The command is then checked for correctness in DMIF checking station 3, and is then processed by DMIF layer 4. DMIF layer 4 then calls Internet protocol 5 in order to create the connection with terminal 6. DMIF layer 4 will wait until either the connection to terminal 6 has been created or the wait time specified in the command has been reached.

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Using this method, in the Transfer Request command it is possible to load data from other terminals. For this purpose, the data file must be named, as must the location at which the data file is located and the location to which the data file is loaded. In addition, it is provided that in the Transfer Request command a parameter is indicated concerning whether the application receives an acknowledgment or not. On the basis of this parameter, DMIF layer 4 recognizes whether it is to send an acknowledgment to the application or not.

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Figure 3 schematically shows the design of a software system in a terminal that enables the calling (described in Figure 1) of an Internet protocol using a DMIF layer. A multimedia application 25 communicates with a DMIF layer 27 using commands 26. This communication is carried out in both directions. The commands 26 constitute a DAI. They thus form this interface. The Transfer Request command is added to this interface, as is also a command that specifies the acknowledgment.

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Internet protocols that are called by DMIF layer 27 are for example connected to DMIF layer 27. For this purpose, commands with which these Internet protocols can be called are inserted into DMIF layer 27.

Figure 4 shows the flow of information for a data file transfer from another terminal to a DMIF terminal; here an application executed on the DMIF terminal does not receive a message concerning the status of the communication from the DMIF layer. The application will therefore assume that the desired data file can come at any time.

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Multimedia application 7 sends a request that a particular data file be loaded from another terminal. DMIF layer 9 then creates the communication with the remote terminal via the Internet, using an Internet protocol 10. DMIF layer 9 receives the desired data file via the Internet using Internet protocol 10. DMIF layer 9 places a pointer on the received data file, and multimedia application 7 receives a message that the data file has been received and the data are in order, as well as the pointer to the received data file.

10

In the following, a flow of information is shown for the case in which a multimedia application 7 wishes to load a particular data file from another terminal, but the maximum time that DMIF layer 9 will wait until the connection to the desired terminal is set up has been exceeded.

15

Multimedia application 7 sends a command, Transfer Request, to the effect that the application wishes to load a particular data file from another terminal. DMIF layer 9 processes this command and starts an Internet protocol 10 in order to establish connection with the desired terminal via the Internet. DMIF layer 9 recognizes that the maximum wait time for a connection setup with the remote terminal has been exceeded, and communicates this to multimedia application 7. An error message transmitted to DMIF layer 9 via the Internet is handled in the same way.

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In the following, the flow of information is shown for the case in which a multimedia application of a DMIF terminal 35 wishes to load a data file from another terminal, and receives acknowledgment messages from DMIF layer 9 concerning the status of the communication.

30

Multimedia application 7 on DMIF terminal 35 sends a command, Transfer Request, for the loading of a data file from another terminal. DMIF layer 9 processes this command, and

multimedia application 7 is informed as to the number with which this request of multimedia application 7 has been provided by DMIF layer 9, and that this request has been recognized. In addition, DMIF layer 9 starts an Internet protocol 10, so that the desired terminal is reached via the Internet. DMIF layer 9 recognizes that items of information have been received via the Internet for multimedia application 7, and communicates the them in multimedia application 7. DMIF layer 9 receives the desired data file, and DMIF layer 9 gives multimedia application 7 a pointer to this loaded data file.

An MPEG-4 application 7, whose network access takes place via a DMIF layer 9, wishes to address a World Wide Web server in order to load a data file via the HTTP protocol. MPEG-4 application 7 communicates a command, Transfer Request, which signals the request for this data transfer, via the DAI, and necessary parameters such as target address and data file and connection parameters are handed over. DMIF layer 9 opens a signaling channel that communicates the desire of the MPEG-4 application to the HTTP terminal, and receives the data file according to the HTTP standard. The application is informed as to whether the transmission has taken place or not, and DMIF layer 9 provides the application with a pointer to the received data file.

An MPEG-4 application 7 wishes to send an e-mail. In this case, a pointer to the e-mail, along with the command Transfer Request for the transfer of a data file, is communicated to the DMIF layer, and DMIF layer 9 is additionally informed that an e-mail is to be sent using this data file. With this information, DMIF layer 9 can create a connection to the terminal for the sending of e-mails, and the e-mail can be sent using, for example, the POP-3 protocol. Finally, application 7 is informed that the data transfer has been carried out and that it was possible to send the e-mail.

Abstract Of The Disclosure

A terminal having a coder and decoder for MPEG4 data files is proposed that is used for the transmission of data files from and/or to a multimedia application via the Internet using an interface element. For this purpose, the interface element includes commands with which the interface element calls protocols, such as for example Internet protocols, in order to create a data file transmission to other terminals via the Internet. In this way, a high degree of flexibility is achieved for the use of terminals having the interface element. In addition, it is therefore unnecessary to build functions into the multimedia applications that enable a data file transmission via the Internet. In addition, there exist commands that permit the multimedia application to inform the interface element of a data file transmission with other terminals via the Internet, and additional commands make it possible for the interface element to send acknowledgment messages to the multimedia application concerning the status of the data file transmission.

APT 24 ANDT

10/019870

531 Rec'd PCT/EE 26 DEC 2001

Translation of New German Pages 1 and 1a

TERMINAL HAVING A CODER AND DECODER FOR MPEG4 DATA FILES

Background Information

The invention is based on a terminal having a coder and decoder for MPEG4 data files of the type indicated in the independent patent claim.

It is known that terminals use multimedia applications according to the standard ISO/IEC JTSC1/SC29/W11-MPEG 4. An interface element, the DMIF (Delivery Multimedia Integration Framework) layer, represents a component of MPEG4 that enables access of an MPEG4 application to a network, or access to local storage media, via specific commands, known as DAI (DMIF Application Interface). In this way, it is achieved that no network access, or access to local storage media, need be built into an application according to MPEG-4.

In MPEG-4, each data file is handled as a separate stream of data; i.e., a new channel is opened for each stream of data, and thus for each data file.

In J.F. Huard et al.: Realizing the MPEG-4 Multimedia Delivery Framework, IEEE Network, pp. 35-45, July/August 1998, describes [sic] the functioning of DMIF and the DAI, and discusses communication between DMIF terminals. However, this communication can also be carried out via the Internet. In N. Delgado et al.: A MPEG-4 DMIF Implementation Over IP Networks, pp. 281-290, INDC 98, the use of DMIF in communication via the Internet is described. Here, both the sending and the receiving terminal have the DMIF functionality.

Advantages of the Invention

The terminal according to the present invention having the

features of the independent patent claim has, in relation thereto, the advantage that a transmission of data files via the Internet by a multimedia application is enabled between a terminal having the interface element and other terminals not having the interface element. In this way, access to Internet services, such as for example the World Wide Web, FTP, e-mail, and Telnet, is now possible for terminals having the interface element, in particular the DMIF layer, and thus for the multimedia application. This significantly expands the range of application of the terminals having such an interface element.

In addition, it is advantageous that no functions need be added to the multimedia application in order to enable a transfer of data files via the Internet, since these functions are taken over by the interface element. Thus, multimedia applications are independent of the respective characteristics of the terminal; only the commands to the interface element that executes the actual data file transfer via the Internet need be known.

In addition, it is advantageous that data files in various formats from other terminals can now be loaded by terminals in a simple manner, using the interface element.

Through the measures stated in the dependent claims, the advantageous development and improvement of the terminal indicated in the independent claim is possible.

The terminal according to the present invention offers the advantage that the multimedia application that has requested the data file transfer via the Internet is informed by the interface element about the status of the data file transfer via the Internet. For example, the multimedia application can be informed as to whether the data file transfer has been accomplished or not.

It is particularly advantageous that the interface element calls protocols, such as for example the TCP/IP protocol, in order to address other terminals that do not have the interface element. In this way, the flexibility of terminals having the interface element is significantly increased. Because this calling is carried out through new specific commands in the interface element, this calling is simple and fast. In addition, the existing Internet protocols can be accessed, so that an implementation of the calling of Internet protocols by the interface element is very simple.

Advantageously, with the method according to the present invention a data file transfer from arbitrary terminals to or from a terminal can be carried out using the interface element. In this way, a high degree of flexibility is achieved.

It is advantageous that the multimedia application informs the interface element as to which address the sought terminal has, which data file or which service is sought, and how long the interface element is to wait for the construction of a data file transfer. In this way, the

interface element need only forward these items of information from the multimedia application, and, in addition, the application is informed as to how long it is to wait for a data file transfer.

5 In the acknowledgment message concerning the status of the data file transmission to the other terminal, the interface element delivers to the multimedia application, among other things, a pointer to received data files, and the interface element informs the multimedia application concerning the availability of data files. In this way, the user of the multimedia application is kept continually informed concerning the status of the data file transmission,
10 and can react thereto if necessary.

In addition, the multimedia application is advantageously informed as to the fact that the multimedia application's request for a data file transmission has been registered with another terminal, or as to which items of information have been received from the requested terminal.

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Drawing

Exemplary embodiments of the invention are shown in the drawing and are explained in more detail in the following specification. Figure 1 shows a terminal having an interface element,
20 and the connection to other terminals; Figure 2 shows a block diagram describing the calling of a terminal by a DMIF terminal; Figure 3 shows the schematic construction of the software system in the DMIF terminal; Figure 4 shows a flow of information from the application at a DMIF terminal to the Internet and back.

25 Description of the Exemplary Embodiments

Figure 1 shows how a terminal 35 according to the present invention is connected with other terminals via the Internet 31. Here, these additional terminals are a World Wide Web server 34, an FTP server 32, and a POP3 server 33. A server is a computer from which other
30 computers can transmit data files and/or can cause programs to be executed. The World Wide Web is a generally known service of the Internet 31. FTP stands for File Transfer Protocol, i.e., a protocol enabling the transmission of data files via the Internet. A POP3 protocol is a widely distributed protocol for operating a computer for the processing of electronic mail and

for the reception of electronic mail and transmission of mail to be sent by the user via his/her terminals, the POP3 server ensuring that the electronic mail reaches its addressees. Besides these cited servers, any other server connected to the Internet 31 is also available for the terminal 35, as long as terminal 35 is authorized for access.

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The design of terminal 35 is as follows: an application 29 according to the MPEG-4 standard, for example a program with which video data are coded, is placed on an interface element 30. This interface element 30 contains functions that allow access to the Internet 31 via known Internet protocols, or for example also local storage media. Due to the introduction of such an interface element 30, no access functions to the Internet 31, or for example the local storage media, need be integrated into multimedia application 29.

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Interface element 30 is the DMIF layer in the above-cited standard ISO/IEC JTSC1/SC29/W11-MPEG4, but supplemented with the features of the patent claims, and is so designated in the following exemplary embodiments. The commands that allow communication between the DMIF layer and application 29 are acquired through the DAI.

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The block switching diagram in Figure 2 describes a flow of information from a multimedia application 1 via a DAI 2 via a DMIF checking station 3, a DMIF layer 4, via Internet protocol 5 to a terminal 6 sought by the application. Multimedia application 1, which is used on the DMIF terminal, requests the connection to terminal 6, which is not a DMIF terminal, but rather is for example an e-mail terminal, i.e. for example a POP3 server. Via interface DAI 2, application 1 sends a request for a data file transfer with terminal 6. For this purpose, multimedia application 1 communicates a command, referred to below as Transfer Request, expressing this request and having for example the information concerning which data file is to be transferred, or which service is desired by the application, for example e-mail, and the location where the data file is to be stored.

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In addition, this command has the information concerning the maximum length of time that DMIF layer 4 is to wait until the communication with the other terminal is created. In this way, it is prevented that DMIF layer 4 waits too long for a connection that cannot be set up for reasons such as, for example, the failure of the sought terminal.

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The command is then checked for correctness in DMIF checking station 3, and is then processed by DMIF layer 4. DMIF layer 4 then calls Internet protocol 5 in order to create the connection with terminal 6. DMIF layer 4 will wait until either the connection to terminal 6 has been created or the wait time specified in the command has been reached.

5

Using this method, in the Transfer Request command it is possible to load data from other terminals. For this purpose, the data file must be named, as must the location at which the data file is located and the location to which the data file is loaded. In addition, it is provided that in the Transfer Request command a parameter is indicated concerning whether the application receives an acknowledgment or not. On the basis of this parameter, DMIF layer 4 recognizes whether it is to send an acknowledgment to the application or not.

10

Figure 3 schematically shows the design of a software system in a terminal that enables the calling (described in Figure 1) of an Internet protocol using a DMIF layer. A multimedia application 25 communicates with a DMIF layer 27 using commands 26. This communication is carried out in both directions. The commands 26 constitute a DAI. They thus form this interface. The Transfer Request command is added to this interface, as is also a command that specifies the acknowledgment.

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Internet protocols that are called by DMIF layer 27 are for example connected to DMIF layer 27. For this purpose, commands with which these Internet protocols can be called are inserted into DMIF layer 27.

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Figure 4 shows the flow of information for a data file transfer from another terminal to a DMIF terminal; here an application executed on the DMIF terminal does not receive a message concerning the status of the communication from the DMIF layer. The application will therefore assume that the desired data file can come at any time.

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Multimedia application 7 sends a request that a particular data file be loaded from another terminal. DMIF layer 9 then creates the communication with the remote terminal via the Internet, using an Internet protocol 10. DMIF layer 9 receives the desired data file via the Internet using Internet protocol 10. DMIF layer 9 places a pointer on the received data file, and multimedia application 7 receives a message that the data file has been received and the

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data are in order, as well as the pointer to the received data file.

In the following, a flow of information is shown for the case in which a multimedia application 7 wishes to load a particular data file from another terminal, but the maximum time that DMIF layer 9 will wait until the connection to the desired terminal is set up has been exceeded.

Multimedia application 7 sends a command, Transfer Request, to the effect that the application wishes to load a particular data file from another terminal. DMIF layer 9 processes this command and starts an Internet protocol 10 in order to establish connection with the desired terminal via the Internet. DMIF layer 9 recognizes that the maximum wait time for a connection setup with the remote terminal has been exceeded, and communicates this to multimedia application 7. An error message transmitted to DMIF layer 9 via the Internet is handled in the same way.

In the following, the flow of information is shown for the case in which a multimedia application of a DMIF terminal 35 wishes to load a data file from another terminal, and receives acknowledgment messages from DMIF layer 9 concerning the status of the communication.

Multimedia application 7 on DMIF terminal 35 sends a command, Transfer Request, for the loading of a data file from another terminal. DMIF layer 9 processes this command, and multimedia application 7 is informed as to the number with which this request of multimedia application 7 has been provided by DMIF layer 9, and that this request has been recognized. In addition, DMIF layer 9 starts an Internet protocol 10, so that the desired terminal is reached via the Internet. DMIF layer 9 recognizes that items of information have been received via the Internet for multimedia application 7, and communicates the them in multimedia application 7. DMIF layer 9 receives the desired data file, and DMIF layer 9 gives multimedia application 7 a pointer to this loaded data file.

An MPEG-4 application 7, whose network access takes place via a DMIF layer 9, wishes to address a World Wide Web server in order to load a data file via the HTTP protocol. MPEG-4 application 7 communicates a command, Transfer Request, which signals the request for

this data transfer, via the DAI, and necessary parameters such as target address and data file and connection parameters are handed over. DMIF layer 9 opens a signaling channel that communicates the desire of the MPEG-4 application to the HTTP terminal, and receives the data file according to the HTTP standard. The application is informed as to whether the transmission has taken place or not, and DMIF layer 9 provides the application with a pointer to the received data file.

An MPEG-4 application 7 wishes to send an e-mail. In this case, a pointer to the e-mail, along with the command Transfer Request for the transfer of a data file, is communicated to the DMIF layer, and DMIF layer 9 is additionally informed that an e-mail is to be sent using this data file. With this information, DMIF layer 9 can create a connection to the terminal for the sending of e-mails, and the e-mail can be sent using, for example, the POP-3 protocol. Finally, application 7 is informed that the data transfer has been carried out and that it was possible to send the e-mail.

What is claimed is:

What is claimed is:

- NY01 430967 v 1

terminal using Internet protocols.

4. The terminal according to claim 3, wherein the interface element (30) is fashioned for the purpose of communicating to the multimedia application (29) with [sic] the message concerning the success of the reception of the data file from the sought terminal, a pointer to the received data files, and additional items of information concerning the availability of data files.

5. The terminal according to claim 4, wherein the interface element (30) is fashioned for the purpose of providing the multimedia application (29) with a registration for requesting a data file transmission via the Internet (31).

Abstract

A terminal (35) having a coder and decoder for MPEG4 data files is proposed that is used for the transmission of data files from and/or to a multimedia application (29) via the Internet (31) using an interface element (30). For this purpose, the interface element (30) includes commands with which the interface element (30) calls protocols, such as for example Internet protocols, in order to create a data file transmission to other terminals via the Internet (31). In this way, a high degree of flexibility is achieved for the use of terminals (35) having the interface element (30). In addition, it is therefore unnecessary to build functions into the multimedia applications (29) that enable a data file transmission via the Internet. In addition, there exist commands that permit the multimedia application to inform the interface element (30) of a data file transmission with other terminals via the Internet, and additional commands make it possible for the interface element (30) to send acknowledgment messages to the multimedia application (29) concerning the status of the data file transmission.

1 / 2

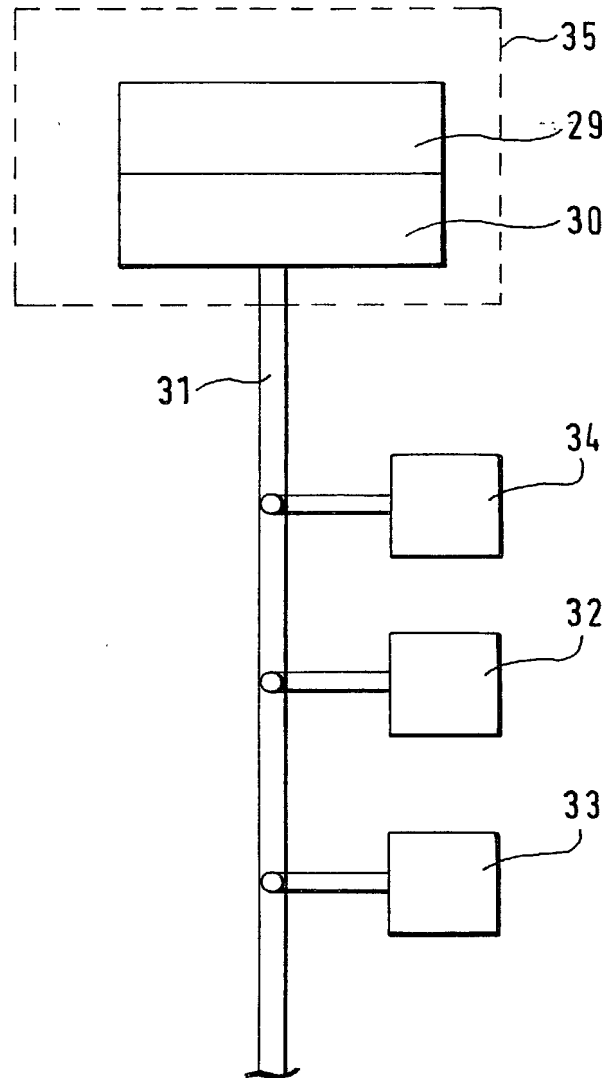


Fig. 1

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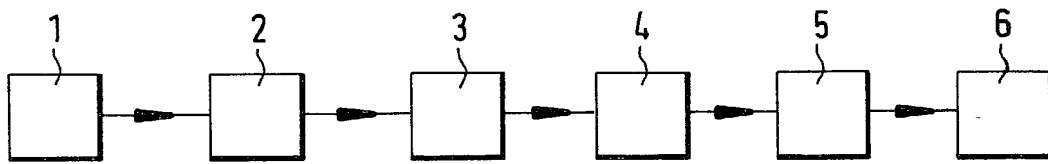


Fig. 2

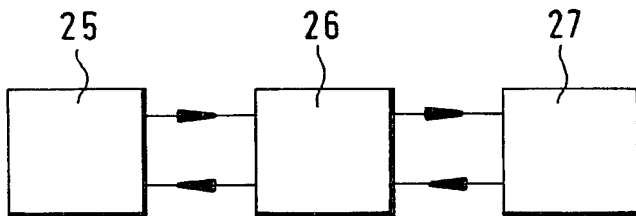


Fig. 3

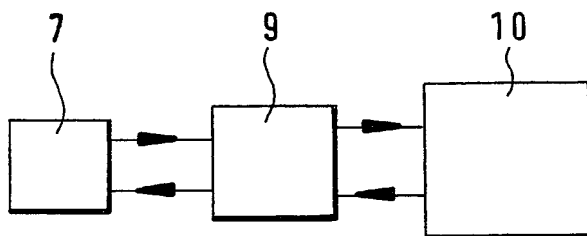


Fig. 4

10191/2167

**COMBINED DECLARATION AND
POWER OF ATTORNEY FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below adjacent to my name.

I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **TERMINAL HAVING A CODER AND DECODER FOR MPEG4 DATA FILES**, the specification of which was filed as International Application No. PCT/DE00/02005 on the 16th day of June, 2000.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a). I hereby claim foreign priority benefits under Title 35, United States Code § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international applications(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

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AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119**

Country : Federal Republic of Germany

Application No. : 199 29 379.1

Date of Filing: June 25, 1999

Priority Claimed

Under 35 U.S.C. § 119 : ☒ Yes ☐ No

I hereby claim the benefit under Title 35, United States Code § 120 of any United States Application or PCT International Application designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations § 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

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PCT INTERNATIONAL APPLICATIONS
DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. § 120**

U.S. APPLICATIONS

Number :

Filing Date :

**PCT APPLICATIONS
DESIGNATING THE U.S.**

PCT Number :

PCT Filing Date :

I hereby appoint the following attorney(s) and/or agents to prosecute the above-identified application and transact all business in the Patent and Trademark Office connected therewith.

(List name(s) and registration number(s)):

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

1-00

e. p. Wawa

Date 15. May 2002

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